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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/605,365 | 09/25/2003 | Baldev S. Ahluwalia | GEMS8081.149 | 2364 |
| 27061 7590 11/13/2008 ZIOLKOWSKI PATENT SOLUTIONS GROUP, SC (GEMS) 136 S WISCONSIN ST PORT WASHINGTON, WI 53074 | | | EXAMINER CHENG, JACQUELINE | |
| | | | ART UNIT 3768 | PAPER NUMBER |
| | | | NOTIFICATION DATE 11/13/2008 | DELIVERY MODE ELECTRONIC |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/605,365 | Applicant(s) AHLUWALIA ET AL. | |
| | Examiner JACQUELINE CHENG | Art Unit 3768 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed July 16, 2008 have been fully considered but they are not persuasive. As to claim 8 Foo'946 (US 6,498,946 B1) does not only qualify as prior art under 35 U.S.C. 102(e). Foo'946, having a publication date of December 24, 2002 which is before the filing date of September 24, 2003 of the preset application qualifies as prior art under 35 U.S.C. 102(a).
2. Applicant's arguments, filed July 16, 2008, with respect to the rejection(s) of claim(s) 1-6 and 17 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Meyer (US 5,233,301) and Foo (US 5,429,134).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3, 6, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Meyer (US 5,233,301). Meyer discloses a pulse sequence which involves defining a set of user selected imaging parameters such as the spatial slice width and a spectral component of the object to be imaged. Two or more excitations (train of alpha pulses) are then selected depending on the

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desired slice width and which tissue is to be suppressed and applied after a simultaneously spatial and spectrally selective pulse (col. 2 line 49-68, col. 6 line 51-59). The data corresponding to a null point of the undesired (suppressed) tissue is placed at the center of k-space (fig. 6)

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer.

7. Meyer discloses all that is claimed except for explicitly disclosing that the amount of the multiple excitation pulse that is selected is carried out on-the-fly. However it would be obvious to one skilled in the art at the time of the invention that as for each patient/imaging study a different minimum slice width would be desired. So therefore depending on the minimum slice width of the imminent imaging study the number of pulses would vary and be selected and set before the imaging sequence in order to minimize the minimum scan time (col. 6 line 51-58).

8. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foo'134 (US 5,429,134).

9. Foo'134 discloses a MRI system which comprises the usual MRI parts including the standard gradient coils positioned about a bore, transmitting and receiving components for

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transmitting and receiving a RF signal, control and arithmetic operation components (fig. 1).

Foo'134 does not explicitly disclose determining the null point and the time interval for the longitudinal magnetization of the tissue to recover to the null point, however the system of Foo'134 wants to make the longitudinal magnetization of the suppressed tissue to pass through zero at the centers of the alpha pulses (col. 26-32). In order to make the null point be at the center of the pulses, it is obvious that these values must be known so that the calculations can be made manipulate the pulses to make certain that the null falls through the middle of them. One of such calculations is of the flip angle of the first inversion pulse which is determined by determining an arcos of a ratio between steady state magnetization and thermal equilibrium magnetization (col. 47-55). For example to maintain a uniform inversion recovery time of 44 msec, a flip angle of the first inversion pulse is 120 degrees while the flip angle of subsequent inversion pulses is 180 degrees (col. 6 line 1-5).

10. Claim 12: Although Foo'134 does not explicitly disclose applying a 3D gradient echo acquisition it would be obvious to apply either a 2D or 3D acquisition depending on the desired image. It would be obvious to apply a 3D acquisition to obtain a 3D image in order to have a more comprehensive view of the region of interest.

11. Claim 13: Foo'134 also does not explicitly disclose the sequence being carried out on the fly, however this would also be obvious as not every patient has the same heart rate and R-R interval and not everyone can hold their breath for the same amount of time, therefore the amount of segments which can fit into a patient's R-R interval will change and therefore has to be set on the fly (col. 4 line 67-col. 5 line 1).

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12. Claim 14: Foo'134 discloses determining a various parameters such as bandwidth (col. 6 line 6-13), resolution (col. 1 line 52-55), TR (col. 4 line 37-41), flip angle (col. 5 line 50-55), and number of slices (views, col. 5 line 2-5) which all together (a set of inputs) are used to create the pulse sequence desired.

13. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Foo'946 (US 6,498,946 B1).

14. Foo'946 discloses an MRI system which comprises the usual MRI parts including the standard gradient coils positioned about a bore, transmitting and receiving components for transmitting and receiving a RF signal, and control and arithmetic operation components (col. 2 line 30-35, fig. 1). In the system of Foo'946 an inversion pulse is applied and then a series of excitation (alpha) pulses is applied such that the signal from the tissue (blood) is near a null point. Although Foo'946 does not explicitly state determining the time interval and the number of pulses, in order to perform the timing execution, these factors must be known or else too few or too many excitation pulses could be applied and the desired result of reaching the null point will not be achieved (col. 2 line 5-12).

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 5,422,572 to Yao and US 2006/0164082 A1 to Foxall.

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16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JACQUELINE CHENG whose telephone number is (571)272-5596. The examiner can normally be reached on M-F 10:00-6:30.

17. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

18. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JC

/Long V Le/
Supervisory Patent Examiner, Art Unit 3768